



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,986	10/04/2005	Mitsuru Kitamura	A-501	3344
802	7590	11/06/2007		
PATENTTM.US			EXAMINER	
P. O. BOX 82788			LAVARIAS, ARNEL C	
PORTLAND, OR 97282-0788			ART UNIT	PAPER NUMBER
			2872	
			MAIL DATE	DELIVERY MODE
			11/06/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/551,986	Applicant(s) KITAMURA, MITSURU	
	Examiner Arnel C. Lavarias	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 9/15/07, 10/4/05.  
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.  
 4a) Of the above claim(s) 1-4, 7 and 8 is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 5 and 6 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 04 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/4/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group III (Claims 5-6) in the reply filed on 9/15/07 is acknowledged. The traversal is on the ground(s) that the searches and examination for all the inventions would be similar. This is not found persuasive because each of the listed inventions in the Office Action dated 8/17/07 include special technical features exclusive to each group. Each of these special technical features would require a different and separate search and examination by the Examiner, making it a serious burden on the Examiner to search and examine so many different inventions. The requirement is still deemed proper and is therefore made FINAL.
2. Claims 1-4, 7-8 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 9/15/07.

### ***Priority***

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

4. Two documents in the information disclosure statement filed 10/4/05 fail to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. These documents have been crossed out, and the information referred to therein has not been considered.

***Drawings***

5. The originally filed drawings were received on 10/4/05. These drawings are objected to for the following reason(s) as set forth below.

6. The drawings are objected to because of the following informalities:

Figure 3- 'recyangular' in the box text for 'ST7' should read 'rectangular'

Figure 6- 'recyangular' in the box text for 'ST7' should read 'rectangular'.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional

replacement sheets may be necessary to show the renumbering of the remaining figures.

Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

7. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet *within the range of 50 to 150 words*. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. *It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.*

8. The abstract of the disclosure is objected to because of the following reasons:

Abstract is too long.

Abstract, line 4- delete 'the present invention provides'

Correction is required. See MPEP § 608.01(b).

9. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in

correcting any errors of which applicant may become aware in the specification.

Examples of such errors are set forth below.

10. The disclosure is objected to because of the following informalities:

Page 16, lines 6 and 7; Page 24, line 1- These lines include the abbreviation "EB". The full, unabbreviated word or phrase must be included the first time an abbreviation is used.

Appropriate correction is required.

### *Claim Objections*

11. Claims 5-6 are objected to because of the following informalities:

Claim 5, line 7- the variables ' $\theta_{xz}$ ' and ' $\theta_{yz}$ ' have not been defined in the claim.

Claim 5, line 14- 'point of' should read 'point with'

Claim 6 is dependent on Claim 5, and hence inherits the deficiencies of Claim 5.

Appropriate correction is required.

12. Claims 5-6 are objected to because of the following informalities:

There are multiple limitations in both Claims 5 and 6 that appear to have insufficient antecedent basis. A listing of these limitations follows:

Claim 5, lines 11, 15- 'the divided angle'

Claim 5, line 11- 'the multiple images'

Claim 5, lines 13, 17- 'these converging lights'

Claim 5, line 14- 'the density of pixel'

Claim 5, lines 16-17- 'the density of the images'

Claim 5, lines 17-18- 'the object light'

Claim 6, lines 4, 7- 'the spreading direction'

Claim 6, line 4- 'the light'

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claims 5-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Due to the multiple claim limitations all lacking antecedent basis (See listing above in Section 12) in both Claims 5 and 6, the Examiner finds it difficult to ascertain the relationships between the various structural elements (e.g. the virtual light converging point group, the various images, the various locations/positions, pixels, etc.) that form the computer-generated hologram.

In addition, Claim 5 recites a luminance angular distribution that is divided by angular division. It is not clear to the Examiner what the luminance angular distribution represents (i.e. is this an actual cone of light, or is it just a range of angles which are then divided). Further, it is not clear whether the convergence of the lights to a point occurs for all or only part of the portions divided out in the distribution.

Also, Claim 5 recites a point of/with amplitude equal to the density of pixel. It is unclear if Applicants intend the 'amplitude' to actually equal to an 'intensity' or

'brightness' of the pixel, since density of pixel means a number of pixels in a volume or area.

Further, Claim 5 recites a computer-generated hologram where complex amplitude of an object wave is recorded, and converging lights being recorded as the object light. Based on the specification and drawings of the instant application, this appears to be confusing and incorrect, as the computer-generated hologram is generated via a recordation of the interference pattern between both an object and a reference beam.

Claim 6 recites a light converging point where the spreading direction of the light is mono-dimensional. This appears to be contradictory and confusing. It is unclear how a converging point would have a spreading direction, since light that converges into a point has no spread.

Finally, Claim 6 also recites the virtual converging point comprising a linear light converging line. This also appears to be contradictory and confusing, since a point cannot also be a line.

Since the Examiner finds it difficult to ascertain the scope of both Claims 5 and 6, a clear and meaningful search of the available prior art cannot be conducted for the claimed subject matter.



***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 7068403 to Kitamura.

Kitamura is being cited to evidence a computer-generated hologram generated (See for example Figures 4-5) in a similar fashion to that disclosed in the instant application. However, Kitamura does not appear to be available as prior art against the instant application.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 9:30 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:  
10/551,986  
Art Unit: 2872

Page 9

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Arnel C. Lavarias  
Primary Examiner  
Group Art Unit 2872  
10/29/07

  
ARNEL LAVARIAS  
PRIMARY PATENT EXAMINER